



BAP1321LX

Silicon PIN diode

Rev. 2 — 7 August 2013

Product data sheet

1. Product profile

1.1 General description

Planar PIN diode in a SOD882D leadless ultra small plastic SMD package.

1.2 Features and benefits

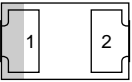

- High voltage, current controlled
- RF resistor for RF attenuators and switches
- Low diode capacitance
- Low diode forward resistance
- Very low series inductance
- For applications up to 3 GHz

1.3 Applications

- RF attenuators and switches

2. Pinning information

Table 1. Discrete pinning

| Pin | Description | Simplified outline | Symbol |
|-----|------------------------|---|---|
| 1 | cathode ^[1] |  <p>Transparent top view</p> |  sym006 |
| 2 | anode | | |

[1] The marking bar indicates the cathode.

3. Ordering information

Table 2. Ordering information

| Type number | Package | | |
|-------------|------------|--|---------|
| | Name | Description | Version |
| BAP1321LX | DFN1006D-2 | leadless ultra small plastic package; 2 terminals; body 1 × 0.6 × 0.4 mm | SOD882D |



4. Marking

Table 3. Marking codes

| Type number | Marking code ^[1] |
|-------------|-----------------------------|
| BAP1321LX | 1001 |
| | 0001 |

[1] For SOD882D binary marking code description, see [Figure 1](#).

4.1 Binary marking code description

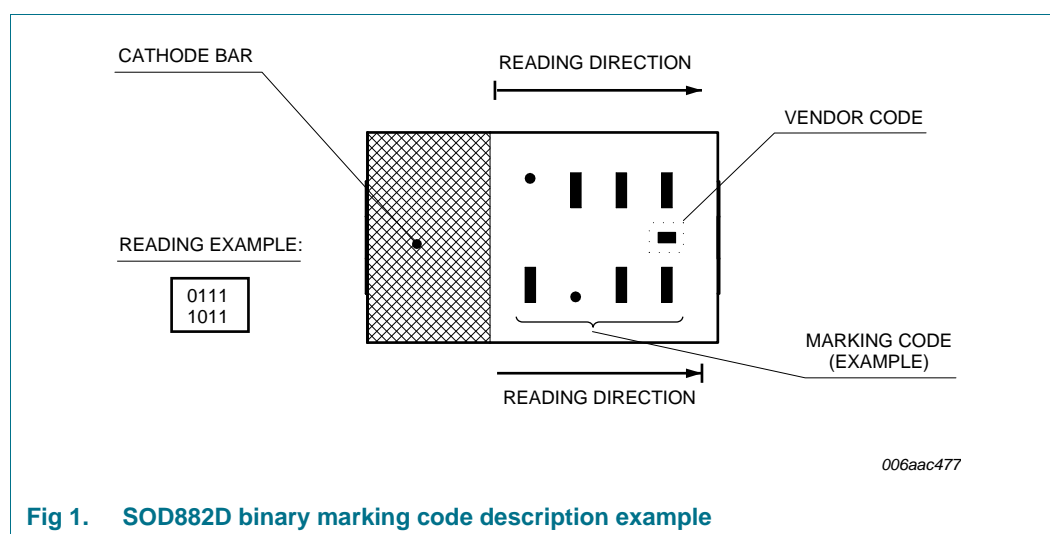


Fig 1. SOD882D binary marking code description example

5. Limiting values

Table 4. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

| Symbol | Parameter | Conditions | Min | Max | Unit |
|-----------|-------------------------|-------------------------|-----|------|------|
| V_R | reverse voltage | | - | 60 | V |
| I_F | forward current | | - | 100 | mA |
| P_{tot} | total power dissipation | $T_{sp} = 90\text{ °C}$ | - | 130 | mW |
| T_{stg} | storage temperature | | -65 | +150 | °C |
| T_j | junction temperature | | -65 | +150 | °C |

6. Thermal characteristics

Table 5. Thermal characteristics

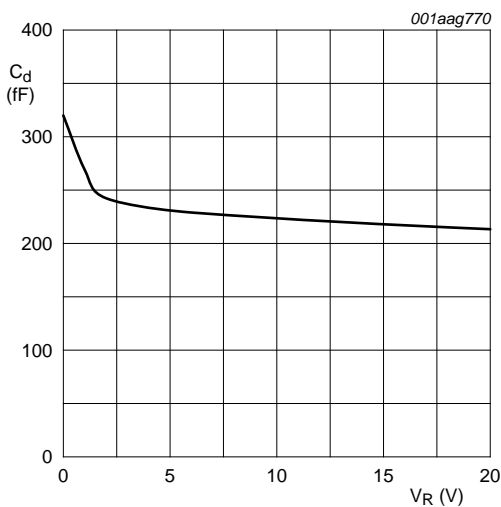
| Symbol | Parameter | Conditions | Typ | Unit |
|----------------|--|------------|-----|------|
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point | | 74 | K/W |

7. Characteristics

Table 6. Characteristics

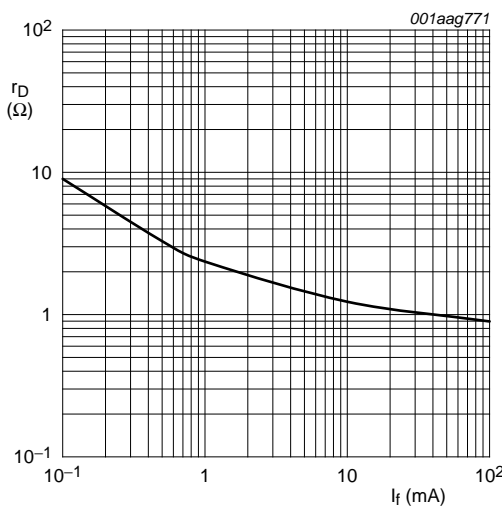
$T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-----------|--------------------------|--|-----|------|------|---------------|
| V_F | forward voltage | $I_F = 50\text{ mA}$ | - | 0.95 | 1.1 | V |
| I_R | reverse current | $V_R = 60\text{ V}$ | - | - | 100 | nA |
| C_d | diode capacitance | see Figure 2 ; $f = 1\text{ MHz}$; | | | | |
| | | $V_R = 0\text{ V}$ | - | 0.32 | - | pF |
| | | $V_R = 1\text{ V}$ | - | 0.27 | 0.38 | pF |
| | | $V_R = 20\text{ V}$ | - | 0.21 | 0.28 | pF |
| r_D | diode forward resistance | see Figure 3 ; $f = 100\text{ MHz}$; | | | | |
| | | $I_F = 0.5\text{ mA}$ | - | 3.3 | 5.0 | Ω |
| | | $I_F = 1\text{ mA}$ | - | 2.4 | 3.6 | Ω |
| | | $I_F = 10\text{ mA}$ | - | 1.2 | 1.8 | Ω |
| | | $I_F = 100\text{ mA}$ | - | 0.9 | 1.3 | Ω |
| ISL | isolation | see Figure 4 ; $V_R = 0\text{ V}$; | | | | |
| | | $f = 900\text{ MHz}$ | - | 17 | - | dB |
| | | $f = 1800\text{ MHz}$ | - | 12 | - | dB |
| | | $f = 2450\text{ MHz}$ | - | 10 | - | dB |
| L_{ins} | insertion loss | see Figure 5 ; $I_F = 0.5\text{ mA}$; | | | | |
| | | $f = 900\text{ MHz}$ | - | 0.25 | - | dB |
| | | $f = 1800\text{ MHz}$ | - | 0.26 | - | dB |
| | | $f = 2450\text{ MHz}$ | - | 0.27 | - | dB |
| L_{ins} | insertion loss | see Figure 5 ; $I_F = 1\text{ mA}$; | | | | |
| | | $f = 900\text{ MHz}$ | - | 0.19 | - | dB |
| | | $f = 1800\text{ MHz}$ | - | 0.20 | - | dB |
| | | $f = 2450\text{ MHz}$ | - | 0.21 | - | dB |
| L_{ins} | insertion loss | see Figure 5 ; $I_F = 10\text{ mA}$; | | | | |
| | | $f = 900\text{ MHz}$ | - | 0.11 | - | dB |
| | | $f = 1800\text{ MHz}$ | - | 0.13 | - | dB |
| | | $f = 2450\text{ MHz}$ | - | 0.14 | - | dB |
| L_{ins} | insertion loss | see Figure 5 ; $I_F = 100\text{ mA}$; | | | | |
| | | $f = 900\text{ MHz}$ | - | 0.09 | - | dB |
| | | $f = 1800\text{ MHz}$ | - | 0.11 | - | dB |
| | | $f = 2450\text{ MHz}$ | - | 0.12 | - | dB |
| τ_L | charge carrier life time | when switched from $I_F = 10\text{ mA}$ to $I_R = 6\text{ mA}$; $R_L = 100\text{ }\Omega$; measured at $I_R = 3\text{ mA}$ | - | 0.48 | - | μs |
| L_S | series inductance | $I_F = 100\text{ mA}$; $f = 100\text{ MHz}$ | - | 0.4 | - | nH |



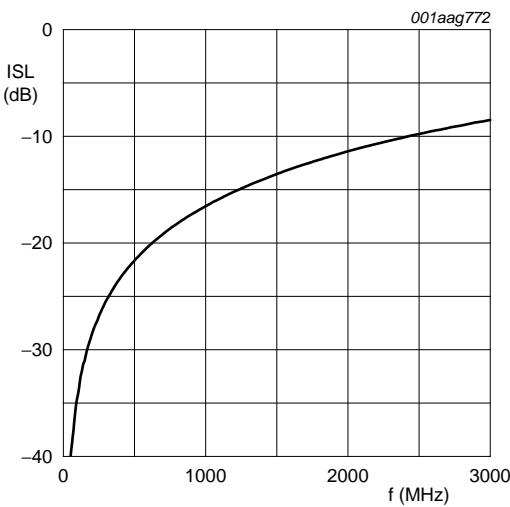
$f = 1\text{ MHz}$; $T_j = 25\text{ }^{\circ}\text{C}$.

Fig 2. Diode capacitance as a function of reverse voltage; typical values



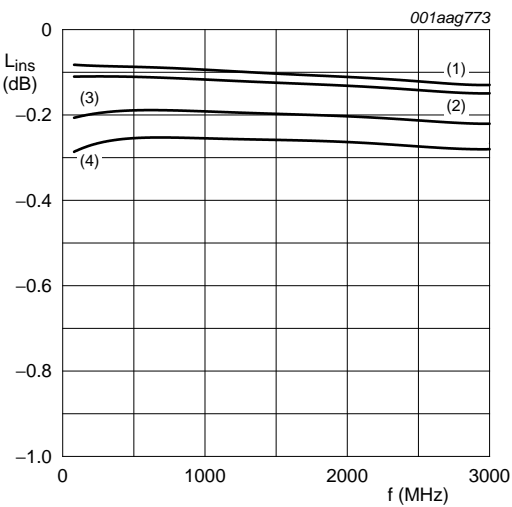
$f = 100\text{ MHz}$; $T_j = 25\text{ }^{\circ}\text{C}$.

Fig 3. Forward resistance as a function of forward current; typical values



$T_{amb} = 25\text{ }^{\circ}\text{C}$
Diode zero biased and inserted in series with a $50\text{ }\Omega$ stripline circuit

Fig 4. Isolation of the diode as a function of frequency; typical values



$T_{amb} = 25\text{ }^{\circ}\text{C}$
(1) $I_F = 100\text{ mA}$
(2) $I_F = 10\text{ mA}$
(3) $I_F = 1\text{ mA}$
(4) $I_F = 0.5\text{ mA}$
Diode inserted in series with a $50\text{ }\Omega$ stripline circuit and biased via the analyzer Tee network

Fig 5. Insertion loss of the diode as a function of frequency; typical values

8. Package outline

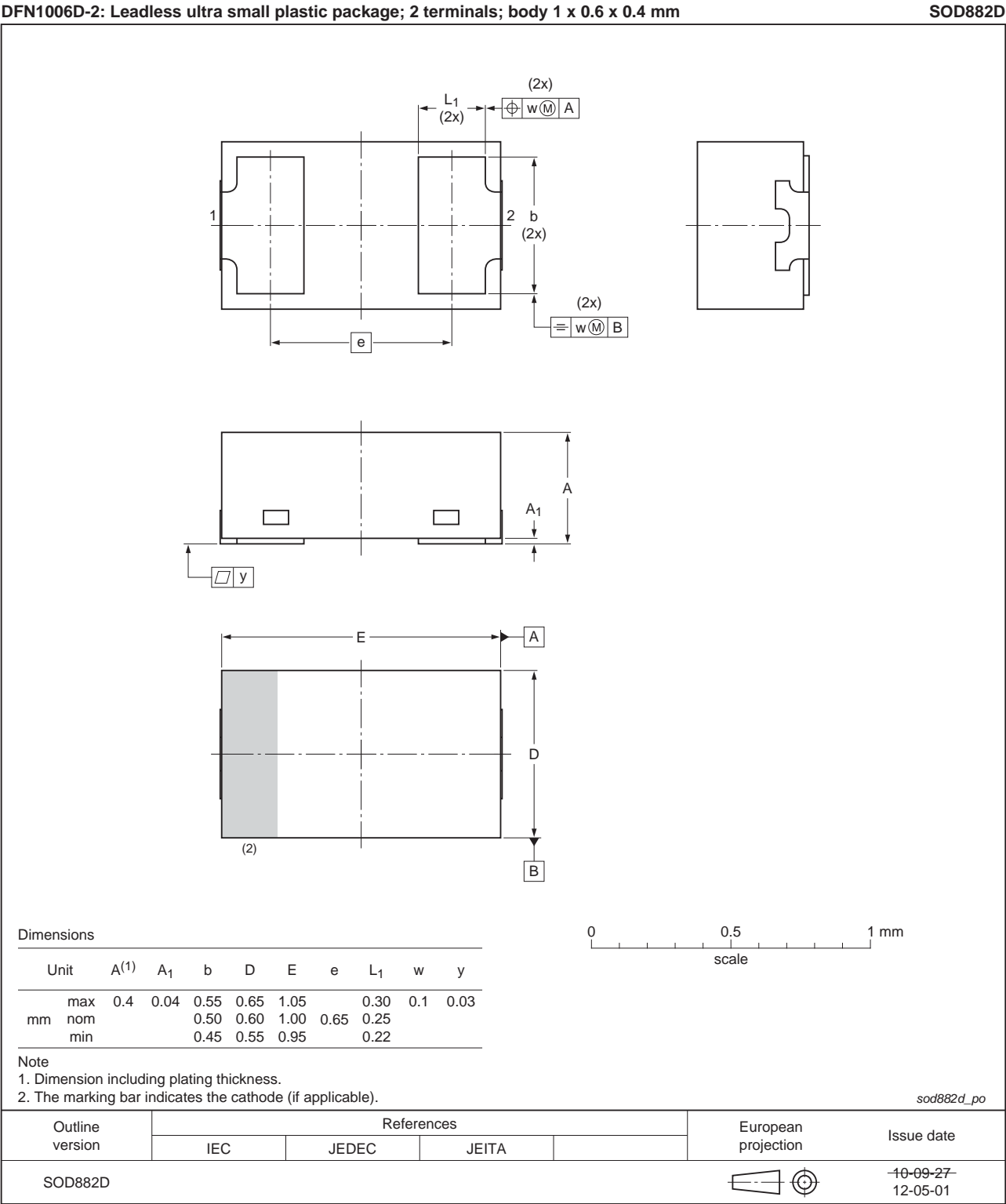


Fig 6. Package outline SOD882D (DFN1006D-2)

9. Abbreviations

Table 7. Abbreviations

| Acronym | Description |
|---------|---------------------------|
| PIN | P-type, Intrinsic, N-type |
| SMD | Surface Mounted Device |
| RF | Radio Frequency |

10. Revision history

Table 8. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|----------------|--|--------------------|---------------|---------------|
| BAP1321LX v.2 | 20130807 | Product data sheet | - | BAP1321LX v.1 |
| Modifications: | <ul style="list-style-type: none">• Section 1.1 on page 1: Changed package to SOD882D• Table 1 on page 1: Changed simplified outline to SOD882D• Table 2 on page 1: Changed package to SOD882D• Section 4 on page 2: Update 'Marking' section• Section 8 on page 5: Changed package to SOD882D | | | |
| BAP1321LX v.1 | 20070730 | Product data sheet | - | - |

11. Legal information

11.1 Data sheet status

| Document status ^{[1][2]} | Product status ^[3] | Definition |
|-----------------------------------|-------------------------------|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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